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DISTRIBUTION AND ABUNDANCE OF THE PYGMY BLUE WHALE

By

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DISTRIBUTION AND CURRENT ABUNDANCE OF PYGMY BLUE WHALES

V.A. Zemsky and E.G. Sahzinov

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DISTRIBUTION AND ABUNDANCE OF THE PYGMY BLUE WHALE

V.A. Zemsky and E.G. Sazhinov

About twenty-five years ago, a hypothesis was made about the possible existence of a very special population of blue whales near the Kerguelen Islands in the Indian Ocean. Whales of this population, which have a striking similarity to blue whales, were named pygmy blue whales (Ichihara, 1961).

In 1964, Zemsky and Borodin proposed classifying the pygmy blue whale as a separate subspecies, *Balaenoptera musculus brevicauda*. Later, Zemsky (1972) proposed classifying the pygmy blue whale as a separate species, *Balaenoptera brevicaudis*, which is comparable to *Balaenoptera musculus* Linn., 1758. Up to the present time, the pygmy blue whale is the least studied mysticete. Furthermore, distribution of this whale is the least studied topic of its biology, though this knowledge could clear up both the taxonomy and phylogeny of this species.

The first specimen of a pygmy blue whale was recorded in March 1960 near the Kerguelen Islands north of Heard Island (Ichihara, 1961). Later, Japanese whaling expeditions caught pygmy blue whales around Crozet and Marion Islands (Ichihara, 1963; Ichihara and Doi, 1964). Gambell (1964) also described a pygmy blue whale landed at Durban, South Africa.

In determining the boundary of the pygmy blue whale's distribution north of 54°S and from 0° to 80°E, Ichihara (1966) described a pygmy blue whale tagged in December 1962 at 56°15'S and 49°03'E. He also mentioned a personal communication with [R.G.] Chittleborough describing catches of pygmy blue whales by whaling stations on the west coast of Australia (Ichihara, 1966). We also made observations of this species off the west coast of Australia (Latyshkevich, Pervushin and Sazhinov, 1973). Yukhov (1969) sighted pygmy blue whales in the Arabian Sea and the Gulf of Aden. Stranded blue whales reported from Sri Lanka in 1932 and 1946 (Deraniyagala, 1948) and Java (Delsman, 1932) were probably pygmy blue whales.

Given this scarce knowledge of pygmy blue whales, there is no scientific information about the distribution of this species. The main reason for this is the absence of a clear taxonomical status for the pygmy blue whale and distinct characteristics that allow for differentiation of the two species of blue whales in the wild. Nevertheless, based on our own

observations, and information provided by Soviet whaling and scientific vessels, together with data from the Bureau of International Whaling Statistics, we may compose the following picture of the seasonal distribution of pygmy blue whales.

OCTOBER. Pygmy blue whales were observed in the Gulf of Aden, in the vicinity of Djibouti and Berbera, and off southwestern Australia (Cape Leeuwin).

NOVEMBER. Pygmy blue whales were observed in the Gulf of Aden (near Socotra Island), in the Gulf of Oman (near Karachi), around Laccadive Islands, around the southwest part of Sri Lanka, around the coast of Somalia and in the equatorial waters northeast of the Seychelles and on the east coast of Madagascar, by Walters Shoal [off southern Madagascar], near Durban, South Africa, north of the Crozet Islands, northeast of Amsterdam and St. Paul Islands, south of Java Island, and along the entire west coast of Australia.

DECEMBER. Pygmy blue whales were observed in the Arabian Sea, around Laccadive Islands, around the Maldives, south of the Indian Peninsula and Sri Lanka, in the Mozambique Channel, near Walters Shoal, northwest of Prince Edward and Crozet Islands, south to 57°S, and northeast of Amsterdam and St. Paul Islands between 30°S and 38°S, off the southwest region of Australia's Cape Leeuwin, and in the Great Australian Bight.

JANUARY. Significant concentrations of pygmy blue whales were observed near Walters Shoal, in the vicinity of Prince Edward, Kerguelen, St. Paul, Crozet, and Amsterdam Islands, in the region of the West Australian Ridge, off the west coast of Australia, and in the Great Australian Bight. Single observations were also made southeast of Heard Island at 41°S 29°E, 45°S 80°E, and 44°S 101°E.

FEBRUARY. Large concentrations of pygmy blue whales were observed around Prince Edward, Kerguelen and Crozet Islands, in the Great Australian Bight, and along the west coast of Tasmania.

MARCH. Pygmy blue whales were observed from 34°S to 57°S and from 34°E to 176°E. The most significant concentrations were observed around Prince Edward, Crozet, Kerguelen, Amsterdam and St. Paul Islands, the Great Australian Bight, Tasmania, the Bass Strait, and the east part of the Tasman Sea. Small groups and single whales were observed around Heard Island, along the west Australian coast, and in Cook Strait.

APRIL. Pygmy blue whales were seen around the south coast of Madagascar near Walters Shoal, in the vicinity of Prince Edward and Crozet Islands, along the entire west coast of Australia from the northwest to Cape Leeuwin, near Tasmania, in the Bass Strait, the Tasman Sea and Cook Strait.

MAY. At the end of the whaling season, pygmy blue whale sightings decreased sharply. During this month, pygmy blue whales were observed only along the west coast of Australia from Dirk Hartog Island to Cape Leeuwin, off Tasmania, and near Walters Shoal off Madagascar.

In June of 1969, several groups of pygmy blue whales were observed from the catchers of the factory ship "Sovietskaya Rossia" in the Banda Sea. There are no data on pygmy blue whale sightings in the Bengal Strait or in the central and northeastern part of the Indian Ocean, even though these regions were frequently visited by our boats. This is, however, well supported by the proposed density distributions of plankton in the Indian Ocean (Moiseev, 1969) and correlates with low productivity and low phyto- and zooplankton biomasses in the region of the central Indian Ocean and the open part of the Bengal Bay (Kanaev, Neiman and Parin, 1975).

Berzin, Volkov and Moroz (1976) suggested the existence of a special Pacific Ocean population of the pygmy blue whale between the Galapagos Islands and Mexico. However, this hypothesis was based exclusively on their data, since blue whales were never hunted in this region and since no data are available relating to this population. Rice (1977) affirmed that the taxonomical status of blue whales observed along the coasts of Chile and Peru is not clear.

Based on our study we estimate that the distribution of the pygmy blue whale encompasses a major portion of the Indian Ocean north of 57°S, the southeastern portion of the Atlantic Ocean, and the Tasman Sea [see Figure 1]. The northern border of the distribution extends along the Gulf of Aden and the Gulf of Oman in the northern part of the Arabian Sea, across the west coast of the Indian Peninsula to the southern portion of Sri Lanka, and the Banda Sea. The western border of the pygmy blue whale's distribution extends along the Somalian coast, through the Mozambique Channel to Durban and continues southeast of Bouvet Island in the South Atlantic, including the southeastern portion of the Atlantic. However, west of 20°E, i.e. in the Atlantic Ocean, only single sightings of pygmy blue whales were recorded. The

Tasman Sea and the west coast of New Zealand, including Cook Strait, comprise the eastern border of the distribution (Sazhinov, 1977).

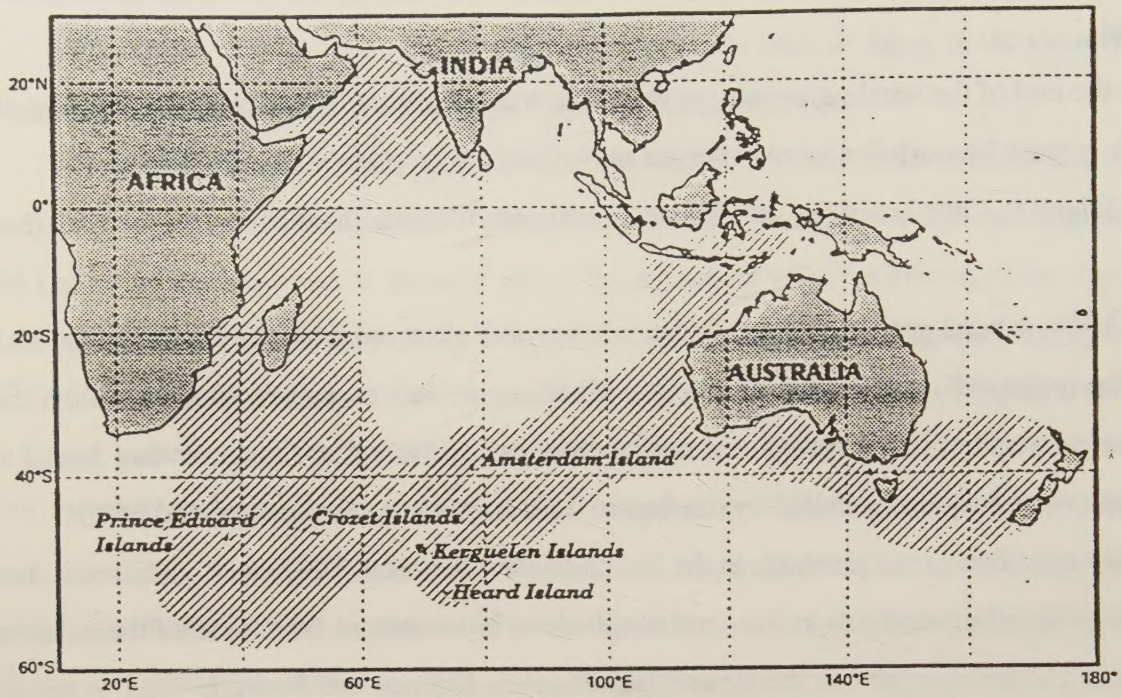

Figure 1. Pygmy blue whale distribution [redrawn from original].

Tomilin (1957) described that blue whales usually inhabit open seas and oceans from the Arctic to the Antarctic, but never form a significant concentration in coastal zones. In the Southern Hemisphere, during the summer season, these whales are usually encountered in Antarctic waters. Common blue whales, according to Tomilin (1957), clearly prefer cold seas and oceans and can be seldom seen in tropical waters. Based on our observations from 1963 to 1975, during the late spring, summer and autumn in the Southern Hemisphere (from November until April), the main concentration of blue whales was seen south of the hypothetical line running through the islands of Tierra del Fuego, South Georgia, Bouvet, Heard, MacQuarie, and Nimrod. A group of blue whales, primarily lactating females with their young, was observed on only one occasion northeast of Prince Edward Islands in December 1966.

Some species of mysticetes which have northern and southern subspecies (i.e. blue, fin, sei, minke, and humpback whales) may be characterized as geographical isolates. The

populations in the Northern Hemisphere are isolated from their analogues in the Southern Hemisphere because their biological rhythms -- primarily reproductive cycles, migrations, and foraging and resting grounds -- have mutually exclusive seasonalities. Between these population distributions there can be intermediate zones, where whales of either population can visit occasionally, but at different times (Zemsky, 1977). Tomilin (1957) stated that infrequent occurrences of blue whales in tropical regions may indicate limited interchange between northern and southern populations of this species and, in actuality, both populations may be completely isolated from each other.

Migrations of the whales are directly correlated with the maximum seasonal productivity of oceanic waters in different localities (Hisard, 1973; Pervushin, 1975). Maximum biological productivity in the tropical waters of the Southern Ocean [= Southern Hemisphere?] can be observed in June-July, i.e. in the winter season. In temperate waters the peak of biological productivity is in spring and summer, but in the Antarctic maximum biological productivity occurs in the summer season. These data correlate well with the classical scheme of migration for baleen whales of the Southern Ocean: in the winter whales congregate in the tropical and subtropical regions, but in the spring they migrate south to temperate waters. In the summer they reach the most southern part of their distribution and in the fall they migrate north to the temperate zone and return to tropical and subtropical waters in the winter. The spring migration of pygmy blue whales in the Southern Hemisphere is probably the same.

In October/November, the main concentration of pygmy blue whales occurs in the tropical and subtropical regions; in the summer and early fall (December to March), they are primarily in the most southern part of their distribution in the Sub-Antarctic region, and in the fall they begin the northward migration into the subtropical region.

Unfortunately, there are no data from which to determine the area of distribution of the pygmy blue whale in the winter. However, based on their distribution in the spring, we may assume that the chief concentration of these whales in winter occurs in tropical and subtropical waters. Pygmy blue whales of the northwestern portion of the Indian Ocean are apparently an exceptional case. This part of the ocean north of the equator is situated in the tropical region, where the hydrological conditions do not differ from those in the southern tropics. However,

phyto- and zooplankton biomasses in the northwestern portion of the Arabian Sea and along the west coast of the Indian Peninsula are comparable to the most productive regions of the world's oceans (Bogorov and Vinogradov, 1961; Travin, 1968). Based on these data, we may conclude that pygmy blue whales of the Arabian Sea and its estuaries form a local sub-population and their migration to the south is insignificant. Nevertheless, the probability of exchange between pygmy blue whales from different regions does exist.

Based on the distribution data of pygmy blue whales in the Southern Hemisphere from October to May, one may assume that there are two branches of the migration pattern which consist of a southern migration during the spring/summer season and a northern migration in the fall. First, the western branch migrates south along the Seychelles and the Amirante Islands through the Mozambique Channel off the coast of Madagascar and Walters Shoal to the Crozet and Prince Edward Islands. The other branch, the eastern, originates from the Banda Sea near the southern coast of Java and migrates south along the western coast of Australia, where it splits into two groups: one going west over the West Australian Ridge in the vicinity of Amsterdam and St. Paul Islands, the other migrating east off Cape Leeuwin, through the Great Australian Bight and the Bass Strait, and continuing along the southern coast of Tasmania into the Tasman Sea.

Tagging is the best method to study the distribution and migration patterns of whales. Unfortunately, tagging of pygmy blue whales was never conducted. To the best of our knowledge there is only one documented return of a tag (Ichihara, 1966). A female, tagged on 1 December 1962 at 56°15'S and 49°03'E with the No. 255-76 of the British National Institute of Oceanography was killed by a Japanese expedition on 4 April 1963 at 43°55'S and 50°02'E. This fact may help to substantiate our hypothesis about the migration pattern of pygmy blue whales. Pygmy blue whales are attracted to the waters surrounding certain islands and seamounts. These areas, in all probability, have high phyto- and zooplankton productivity due to the cyclonic rotation of the water in these regions (Pervushin and Naumov, 1970). Distribution of the pygmy blue whale is considerably well-known despite the complications of past whaling fleets which, in accordance to the rules of the International Whaling Commission, had to conduct their activities within a very limited period of the whaling season.

Therefore, we may delineate three different regions, where independent subpopulations, and possibly populations, of pygmy blue whales are encountered:

1) The Northwestern region includes the tropical and equatorial waters of the Arabian Sea and its estuaries, as well as waters around Laccadive Islands and the Maldives, and westward to Sri Lanka.
2) The Sub-Antarctic region includes the tropical and subtropical waters of the east coast of South Africa and Madagascar, as well as the sub-Antarctic waters around Crozet and Prince Edward Islands.
3) The Australian region includes the tropical, subtropical and sub-Antarctic waters of the southeastern part of the Indian Ocean and the Tasman Sea.

The Northwestern region, as described above, is located in the northern tropical and equatorial parts of the Indian Ocean. The climate of this region is influenced by the Asian and African Continents. There are sharp seasonal changes in the direction of the prevailing winds. Due to the peculiar geographical position of the Indian Ocean, the thermal equator is shifted southward to around 10°S in the winter. In this region, little precipitation and runoff combined with high average yearly temperatures and significant evaporation lead to increased salinity especially in the Persian, Oman and Aden Gulfs of the Arabian Sea.

Complicated interactions between shifts in the prevailing winds and unique hydrological conditions in this region form elaborate current systems. The Somali Current plays the most important role in this system by creating intensive upwelling. Similar upwelling is also observed in the eastern part of the Gulf of Aden as well as other areas in the region. This process significantly enriches the water with nutrients which in turn stimulates bioproductivity. There is closed cyclonic circulation of waters in the Northwestern region year-round. This system is bounded south of the equator by the Equatorial Counter-Current in winter and by the South-West Monsoon Current in summer (Kanaev, Neiman and Parin, 1975; Bogdanov, 1978).

The Sub-Antarctic region is significantly larger than the Northwest region and extends across several climactic zones from the equatorial in the north to the temperate in the south.

Oceanographic characteristics in the north part of this region are influenced by the South Equatorial Current which flows south around Madagascar Island. The influence of the South Equatorial Current is clearly seen in the area between 8°S and 20°S-25°S. In this region, especially at its latitudinal boundaries, large gyres form. The gyres are bounded in the north by the Southern Sub-equatorial Divergence, which is characterized by upwelling in the northern boundaries, and by the Southern Sub-tropical Convergence in the south.

The southern portion of the Sub-Antarctic region is influenced by the southern Indian Ocean Current which originates from the Antarctic Circumpolar Current. It is assumed that the mixing in both winter and summer waters fluctuates little in this region (Kanaev, Neiman and Parin, 1975). The divergence between the Equatorial Counter-Current in the Northwest region and the South Equatorial Current in the Sub-Antarctic region divides the ocean into two parts, each having waters with different characteristics and of different origins (Ivanov-Frantsevich, 1964). Apparently, this zone has become an ecological barrier preventing whales from the Northern Hemisphere to travel into the Southern Hemisphere and vice versa.

Like the Sub-Antarctic region, the Australian region extends from the equator in the north to temperate waters in the south. However, despite their similar latitudinal positions they differ sharply in their oceanographic characteristics.

The west coast of Australia has its own system of currents which comprises the eastern part of the southern Indian Ocean currents. The West Australian Current brings cold sub-Antarctic waters into the tropics, and the East Australian Coastal Current carries tropical waters from the Pacific Ocean southward.

In the western part of the Australian region (80°E to 95°E), where the South Equatorial Current and the southern Indian Ocean currents meet, a powerful quasi-stationary gyre is formed, which is similar to what exists at the southwestern tip of Australia. These large gyres are natural boundaries between the Sub-Antarctic and Australian regions (Kanaev, Neiman and Parin, 1975). Therefore, it is natural to assume that these different habitats should reflect different species compositions as well.

Results of the data obtained in the Northwestern, Sub-Antarctic, and Australian regions show considerably different compositions of whales in terms of sex and time of migration for

different age/size groups and different physiological groups. Data from all three regions show a male to female ratio typical for reproduction. According to data collected over a number of years, sex ratio in pygmy blue whales was almost 1:1 (males 50.3%, females 49.7%).

Nevertheless, fluctuations in male to female ratios on a monthly basis throughout the year were significant in each region and for the entire distribution. Males outnumbered females more often. The pygmy blue whale is a monogamous species and the probability of a local distribution consisting of males with female herds is very remote. A probable explanation for the fluctuation of this ratio, as well as the number of sexually mature and immature animals, may lie in their peculiar distribution during the mating season. At this time, the sexually mature portion of the population participating in the mating process is concentrated in the northern part of the region where, as a rule, catches did not take place.

The ratio among pregnant, barren, lactating, and immature females in the Australian and Sub-Antarctic regions during the summer/fall seasons changes as follows: the number of barren females increases while the number of pregnant females decreases and the number of small immature animals increases. Based on our data, we failed to obtain such clear changes in this ratio for various reasons, the most important being the selectivity of catches, the ban on catches of lactating females accompanied by newborns, and the seasonality of catches.

However, a tendency showing an increase in the number of barren and lactating females and a simultaneous decrease in the number of pregnant females in the Sub-Antarctic region was observed in February. The same tendency occurred in the Australian region but not until April. Apparently migratory schedules of pygmy blue whales in these regions do not correlate. It is known that the number, as well as the density of distribution (number of animals per one unit of area) is specific for each species. Large baleen whales, which include pygmy blue whales, are not an exception and their distribution can be characterized by the absence of large concentrations of whales since they require food in high densities. Feeding "fields" situated in the areas of high bioproductivity are not as vast as they may seem. Unlike terrestrial animals, marine mammals are able to conduct migrations of different lengths without spending too much energy and form patchy areas of distribution (Zemsky, 1972; 1974; 1977).

Another characteristic of all large terrestrial predatory animals, and almost all species of

cetaceans, is their position at the top of the trophic pyramid and, in the case of the large baleen whales, their dependence on organisms with a short life cycle. Fluctuations in zooplankton biomass, which is the main food source for large baleen whales, have been insufficiently studied and their influence on the number of whales is generally unknown. At present, the effects of ocean pollution on cetaceans are also poorly known. Undoubtedly, effects of pollution (i.e. changes in pH, salinity, and oxygen content of the water) may have serious ecological consequences and affect the population size of the pygmy blue whale. The most dangerous element is the thin layer of oil spreading over the surface of the ocean (Tormosov, 1978). Therefore, the real danger for the pygmy blue whale is oil transport in the Persian Gulf, the richest oil basin in the world, and throughout the Arabian Sea. It is certain that many natural and anthropogenic factors affect cetacean populations. However, determining the degree of these effects is practically impossible and will not be addressed.

Cetacean populations, especially those of commercial interest, have undergone significant pressure from commercial whaling and their numbers are sharply reduced. Given indiscriminate catches, populations have fallen to a point beyond which the mere existence of some species becomes questionable. This condition applies to the common blue whale (Zenkevich, 1969; 1971; Sokolov, Tomilin and Yablokov, 1974). Some scientists predict that the recovery of the blue whale to its historic abundance in the Antarctic may take 50 years or more (Bannister, 1968; Mackintosh, 1972).

Catches of pygmy blue whales began in the 1959/60 season. In the 1928/29 season 113 blue whales were taken in the vicinity of the Kerguelen Islands, but it is unknown if they were pygmy blue whales or not. In 1950, catches of pygmy blue whales from shore stations around the western coast of Australia were reported (Ichihara, 1966).

A summary of pygmy blue whale catches from 1959 to 1972 as reported in the International Whaling Statistics, the reports of the Soviet scientific group (AKF) from 1962 to 1972, and information from Ichihara and Doi (1964) and Ichihara (1966) is presented in Table 1.

Analysis of these data shows that from seasons 1959/60 to 1971/72 the following catches of pygmy blue whales were taken from the three regions: Sub-Antarctic -- 6875 whales (58.7%), Australian -- 2682 whales (22.9%), and Northwest -- 2162 whales (18.4%). It is clearly shown

that the majority of whales were caught in the Sub-Antarctic region. When the International Observer Scheme was established on Antarctic factory ships in the 1972/73 season, commercial catches of pygmy blue whales totally ceased.

Table 1. Catches of pygmy blue whales throughout their regions of distribution from 1959/60 to 1971/72.

SEASON	SUB-ANTARCTIC REGION	AUSTRALIAN REGION	NORTHWEST REGION	TOTAL
1959/60	-	311	-	311
1960/61	1127	-	-	1127
1961/62	388	-	-	388
1962/63	1236	74	-	1310
1963/64	1148	138	105	1391
1964/65	127	1136	1861	3124
1965/66	217	361	188	766
1966/67	35	156	8	199
1967/68	313	26	-	339
1968/69	558	22	-	580
1969/70	706	178	-	884
1970/71	607	192	-	799
1971/72	413	88	-	501
TOTAL	6875	2682	2162	11719

Even in 1964, Japanese scientists Ichihara and Doi were concerned about the magnitude of pygmy blue whale catches in the last decades. They tried to establish a population size for the whales and to determine optimal commercial catches. They studied age composition of pygmy blue whales based on the number of ear plug laminations adjusted by a correction factor for meteorological conditions during the collection period (Kurogane and Nemoto, 1963). Ichihara and Doi (1964) determined natural mortality to be 0.11 given the formation of two ear plug

laminations per year and 0.05 if only one lamination is formed per year. Based on these assumptions, the initial population size of pygmy blue whales during the 1960/61 season was 10,992 and 7,598, respectively.

Assuming that this is a valid initial population estimate for pygmy blue whales, the maximum yearly catch should not exceed 400 animals. Ichihara and Doi built their assumptions only on Japanese data and mistakenly assumed that the distribution of pygmy blue whales is limited to the southern portion of the Indian Ocean and the portion of the Atlantic Ocean north of 54°S between 0° and 80°E (i.e. in the Sub-Antarctic region). Therefore, the above mentioned data regarding population size of the pygmy blue whale apply only to this area.

We attempted to determine the population size of the pygmy blue whale in this region based on data taken from Japanese studies, our own data on natural mortality and commercial catches, and a certain birth rate. We assumed that the birth rate and the natural mortality rate are 10% and 5%, respectively, and are constant under non-selective catches. Without assuming absolute precision, since percentages for the natural mortality rate and birth rate were taken arbitrarily, our calculations show that the population of pygmy blue whales in the Sub-Antarctic region decreased more than twofold from the initial stock size (Table 2).

Recovery of a population subject to commercial catches is a function of both the number of catches and the biological regulation of the population (Sokolov, Tomilin and Yablokov, 1974). However, based on data in Mackintosh (1972) and Allen (1973), the birth rate of fin whales in the Antarctic has remained constant over the last several decades. The birth rate of pygmy blue whales probably remained constant as well, since analysis of pregnancy rates in this species did not show visible fluctuations during the last several years.

Based on catch statistics for pygmy blue whales in all three regions of their distribution and assuming that under non-selective commercial catches the catch composition reflects the population's composition, we conclude that the initial stock of this animal during the 1960/61 season consisted of the following numbers: 2,900 whales in the Australian region, about 2,400 whales in the Northwest region, and a total of 12,500-13,000 whales in all areas of its distribution.

Table 2.Population dynamics of pygmy blue whales from the Sub-Antarctic region during commercial whaling.

SEASON	ESTIMATED POPULATION AT SEASON'S BEGINNING	BIRTH RATE (10%)	NATURAL MORTALITY RATE (5%)	COMMERCIAL CATCH	POPULATION AT SEASON'S END
1960/61	7598	760	380	1127	6851
1961/62	6851	685	343	388	6805
1962/63	6805	680	340	1236	5909
1963/64	5909	591	296	1148	5056
1964/65	5056	506	253	127	5182
1965/66	5182	518	259	217	5224
1966/67	5224	522	261	35	5450
1967/68	5450	545	272	313	5410
1968/69	5410	541	270	558	5123
1969/70	5123	512	256	706	4673
1970/71	4673	467	234	607	4199
1971/72	4199	420	210	413	3996

CONCLUSION

One characteristic used in the taxonomic identification of a species is a consistent, permanent distribution. The pygmy blue whale has such a distribution in addition to other characteristics which classify it as a separate species. The pygmy blue whale, unlike common or true blue whales, has a more northern distribution.

Based on our data, pygmy blue whale distribution is clearly defined and can be subdivided into three separate regions where individual groups live. These groups can be considered subpopulations, or even populations. Additional studies cannot be conducted due to the moratorium on catching this species.

Pygmy blue whale distribution is very large. It encompasses the waters along the east coast of Africa including the Arabian Sea and its bays and estuaries, and descends to almost 60°S

extending from Prince Edward, Crozet, and Kerguelen Islands eastward to the waters off Australia. The southern part of the distribution may border on, or even mix with, populations of common blue whales. However, differences in mating seasons exclude interspecies hybridization.

Prior to commercial catches, pygmy blue whale populations consisted of approximately 13, 000 animals across their entire distribution.

[English summary presented in original paper]

The distribution and current abundance of pygmy blue whale.

V.A. Zemsky and E.G. Sazhinov

Although the identification of the pygmy blue whale as an independent species is still argued by some scientists, their existence is considered to be a conclusive fact. Their habitat is divided into three natural areas inhabited by independent subpopulations. The northwest area includes tropical and equatorial waters of the Arabian Sea and adjacent bays as well as waters off the Laccadive Islands and the Maldives and west of Sri Lanka. The second area includes the tropical and subtropical waters of the eastern part of South Africa and off Madagascar, Crozet and Prince Edward Islands. The Australian area includes tropical, subtropical, and sub-Antarctic waters of the southeastern part of the Indian Ocean and the Tasman Sea. The initial stock of the pygmy blue whale numbered possibly 13,000 animals all over the habitat in 1960 when whaling began. The stock is now about half that size.

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